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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,024	02/26/2004	Masahiro Uekawa	2004-0308A	2935

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EXAMINER

PENG, CHARLIE YU

ART UNIT	PAPER NUMBER
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2883

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/786,024

Applicant(s)

UEKAWA, MASAHIRO

Examiner

Charlie Peng

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: Brian Healy

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 21 December 2005 have been fully considered but they are not persuasive.

In summary, applicant argues that:

1. The lenses of Korenaga et al are each disclosed as "ball lenses with a significant external diameter and therefore do not constitute the lens element recited" in claims. This is not found persuasive because Korenaga teaches cylindrical lenses (Fig. 8) as well as ball lenses and examiner is not aware of any claimed limitation restricting the shapes or external diameters of the lenses.

2. Korenaga does not disclose "a lens portion formed at a surface of an optical substrate and a projection portion that comes into contact with the respective grooves". This is not found persuasive because two portions of a same object do not have to be separate and/or discontinuous from each other and that Korenaga teaches a cylindrical converging lens (85a in Fig. 8) having a first portion (flat end faces) formed at a surface (83c, a vertical junction face of a substrate 81) and a second portion (the curved surface of the cylindrical lens 85a) in contact with a guide groove 83a. Collimating lens 85b is placed in another guide groove 83b in the same manner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26-29, 31-35, 37, 38, 40-42, 44-46, 48-50, 52 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. PGPub 2003/0118294 to Korenaga et al. Korenaga teaches a light transmitting/receiving (optical) module comprising a supporting substrate 121, a laser (light emitting element) 126 mounted thereon, a first lens 125, a second lens 130, an optical filter that reflects light of one wavelength yet passes light of other wavelength(s) (wavelength dividing filter) that can be provided instead of a flat isolator 128, and a photodiode (light receiving element). (See at least Figs. 12 & 13 and description) Korenaga further teaches, in another variation of the invention, that the filter can be placed in a different location where a waveguide channel splits (See at least Figs. 14 & 15), where the light emitting element inputs a light signal comprising at least a wavelength λ_1 from a fiber 147 and the light receiving element receives light comprising at least a wavelength λ_2 . (The laser, photodiode, and lens are not illustrated here, but their presence is inherent in order for the optical module to achieve a wavelength dividing/separation function.) Although Korenaga does not teach the first and second lenses 125, 130 to be placed in grooves and have converging and collimating functions, respectively, this is clearly shown, in a separate embodiment of the invention, a collimating lens 85b placed in a groove 83b and a converging lens 85a placed in a groove 83a and the filter (isolator) 88 to be placed in a groove 89 on a substrate 81, wherein an optical fiber 84 and the converging lens meet at an interface 83c. (See at least Fig. 8 and description) Korenaga further teaches a cylindrical converging lens (85a in Fig. 8) having a first portion (flat end faces) formed at a surface

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(83c, a vertical junction face of a substrate 81) and a second portion (the curved surface of the cylindrical lens 85a) in contact with a guide groove 83a. Collimating lens 85b is placed in the substrate 81 in the same manner. The grooves 83a and 83b are of a first structure (triangular cross-section) and the groove 89 is of a second structure (rectangular cross-section). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine separate embodiments of the same invention by Korenaga by placing the lenses and the filter in the grooves formed on the substrate. The motivation would be to ensure a high positional precision of optical elements of the optical module.

With specific reference to claims 27 and 33, it is well known in the art that a diffractive optical element has a wavelength selecting function (i.e., it can simultaneously act as an optical filter). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a diffractive optical element in the lens portion, thereby allowing the lens portion to serve as a wavelength filter and a collimator lens incorporated into one device. The motivation would be to allow the elimination of the wavelength dividing filter as part of the optical module and reduce the cost and/or size of manufacturing the optical module.

With specific reference to claims 28 and 34, although Korenaga does not use silicon as the material of choice for the substrate, it was discussed in the description of the background art that optical package use silicon as a substrate in a related prior invention. (See at least Fig. 26 and description) It would have been obvious to one having ordinary skill in the art at the time the invention was made to use silicon, since it

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has been held to be within general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of necessary choice. In re Leshin, 125 USPQ 416. The motivation would be to use silicon, a widely known, available, and used material, as substrate, as known materials reduce uncertainties over the course of manufacturing.

With specific reference to claims 31 and 37, although Korenaga does not teach coaxial package component, it was discussed in the description of the background art that in conventional optical devices or optical modules, coaxial alignment has to be ensured between optical (package) components. ([0005]) It would have been obvious to one having ordinary skill in the art at the time the invention was made to use coaxial package component. The motivation would be to allow high precision positioning and alignment.

With specific references to claims 38, 42, 46, and 50, Korenaga teaches cylindrical lenses 85a 85b.

With specific references to claims 40, 44, 48, and 52, Korenaga teaches the lenses to be a converging lens 85a and a collimating lens, therefore the direction of light flux is changed 1. from scattered light flux to parallel light flux (collimating) or 2. from parallel light flux to focused light flux (converging).

With specific references to claims 41, 45, 49, and 53, Korenaga teaches the projection portion to be in contact with the guide grooves 83a 83b, and therefore the diameter/size of the projection portion relating to the size/depth of the guide grooves allows the lenses' axes to align with the laser 86.

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Claims 30 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korenaga et al. in view of U.S. Patent 6,843,609 to Yonemura. Korenaga teaches the optical module with a lens, a light-emitting element, a light receiving element, etc., except for holding the optical module in an airtight space, however, such a technique is well-practiced in the art. (Class 385, subclass 94 describes devices utilizing such a technique.) Yonemura teaches an optical module having a lens, a light-emitting element or a light receiving element hermetically sealed from the environment. (See at least Fig. 1 and description) It would have been obvious to one of ordinary skill in the art to use this commonly known technique to improve upon Korenaga's invention. The motivation would be to reduce or eliminate environmental effects on the optical module, such effects could include dust particles causing scattering in free space optical transmission.

Claims 39, 43, 47, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korenaga et al. in view of U.S. Patent 5,420,953 to Boudreau et al. Korenaga does not teach the lenses to have a rectangular handling portion. Boudreau teaches a lens element 5 having a lens formed on a rectangular substrate which extends orthogonally to the axis of the lens element and a groove 3 where the lens element is placed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the lens on a substrate so that the lens element may be handled or picked up easily. The motivation would be to allow accurate alignment between lens and optical component, and easier handling of the lens and avoid contaminating and direct contact with the lens surface. Although Korenaga and

Boudreau do not teach handling the lens via a "handling portion", these claims are drawn to the structure of a device. Since Korenaga and Boudreau's combination meets all the structural limitations of the device, it must be able to at least perform all of the same functions as the device.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charlie Peng whose telephone number is (571) 272-2177. The examiner can normally be reached on 9 am - 6 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charlie Peng
February 27, 2006



Brian Healy
Primary Examiner